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ABSTRACT

This paper describes the development, operations, and effectiveness of the Principals' Computer Network (PCN)--an experimental program created (1) to allow principals to use their schools' microcomputers to access other principals' solutions to common instructional management problems; (2) to enable principals to request suggestions from their peers on specific problems; (3) to provide a network for sharing successful strategies and programs; and (4) to allow principals to expand their computer skills in a way directly relevant to their administrative roles. Online for an 11-week test period in the spring of 1985, the PCN included the following components: a bulletin board for general announcements; elementary and secondary education features boards, containing information from the "Principals' Yellow Pages"; an electronic mail system for private correspondence; news updates on the latest PCN developments; and a list of all PCN users with their personal and general system statistics. A survey of 38 participating principals showed that the electronic network system can stimulate information exchange among principals. Brevity of the operations period was the biggest drawback; and introducing the program in late spring, a busy time, prevented the full participation of many principals. Principals need more time to learn the system and need access to a home computer for evening and weekend use. (IW)

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Using Telecommunications for Principals' Professional Development

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Using Telecommunications for Principals' Professional Development

This paper describes a unique professional development venture for principals called the Principals' Computer Network (PCN). Established on an experimental basis by the Instructional Management Program of Far West Laboratory for Educational Research and Development, the PCN used a telecommunications link to give practicing administrators an opportunity to communicate with their peers via their school's microcomputers.

In creating the PCN, we had three purposes: 1) to allow principals to use their school's microcomputers to access other principals' solutions to common instructional management problems, 2) to enable principals to request suggestions from their peers on specific problems they encounter, and 3) to provide principals with a vehicle for sharing their own successful strategies and programs with other school administrators. In addition, we hoped that the PCN would allow principals to expand their computer skills in a way directly relevant to their roles as school leaders.

Included in the following sections are brief descriptions of the the development of the Principals' Computer Network, the program's operations, the data collection procedures, and the results of the test period during which 38 principals participated.

The Creation of the PCN

For the past four years, the Instructional Management Program has been interviewing and observing principals in order to better understand how they make their schools more effective. One of the most significant findings of our study is that principals often feel isolated because they seldom have

opportunities to learn from or share ideas with other principals (Dwyer, Lee, Rowan, & Bossert, 1983; Barnett, 1985).

In an effort to overcome this isolation, the Instructional Management Program has created a variety of programs to promote information exchange among principals. The Principals' Computer Network evolved from one such project, a catalog titled Principals' Yellow Pages: Solutions to Common Instructional Management Problems (Barnett, Long, Schafer, & McReynolds, 1984).

The Principals' Yellow Pages was expressly designed to provide useful information for principals and to encourage them to contact each other to share information. The catalog provides glimpses of programs and practices that principals have used to deal with some common instructional management problems. The information is supplemented with a directory of principals who contributed to the catalog and are willing to be contacted by catalog users.

Many principals have found the catalog a helpful means for sharing ideas and reducing the isolation school administrators experience. Inherent in this approach, however, were two drawbacks: the catalog could not be easily updated to add new information, and it did not provide principals with a direct method of interaction so that they could conveniently share ideas with each other.

Therefore, we decided to use computer technology to create a telecommunications network between principals nationwide. This network, which we named the Principals' Computer Network (PCN), would stimulate direct exchange between principals, make the information in the Principals' Yellow Pages more accessible to principals, and, simultaneously, stay up-to-date with their changing needs and concerns.

The Program and Its Operations

The PCN was developed as a computerized bulletin board system for principals. The system was online for an eleven-week period in 1985, beginning in early April and continuing through the end of June.

Development of the system began in the fall of 1984 with the selection of suitable hardware and software. After consulting with system operators of various bulletin board systems and testing different bulletin board software ourselves, we selected the GBBS telecommunications software because of its clear on-line documentation and its overall ease of use. The software is designed to run on the Apple computer, which is available in many schools. We chose to use two floppy disks, instead of one hard disk drive, due to the short time span of the program, the limited number of participants, and the greater ease of maintenance. To match the transmission speed of modems commonly found in schools, we set our 300/1200 baud modem at 300 baud. Principals with the faster 1200 baud modems could, however, still access the system. One dedicated telephone line, with regular business service, was installed exclusively for the PCN program.

We designed the PCN so that it included the following components: a bulletin board for general announcements; an elementary ed features board and a secondary ed features board, both of which contained information from the Principals' Yellow Pages specifically tailored for principals at the elementary and secondary levels; an electronic mail system for private correspondence; news updates from the system operators on the latest PCN developments; and a listing of all PCN users with their personal and general system statistics. The topics on the elementary ed and secondary ed boards were determined by the principals before the system went online and were changed approximately every two weeks.

We began selecting PCN participants in January, 1985. We recruited principals from across the country through a variety of media. Respondents who telephoned us to indicate their interest in becoming PCN users were asked to submit background information including their computer experience and school and district demographics. Because our project agreed to pay the phone bills of all participants, we decided to limit participation to 30 principals; however, because demand for participation continued, we added eight more principals during the months of April and May. (These principals agreed to pay their own phone bills.) All of the pilot users were selected on the basis of their interest in participating and their willingness to provide the researchers with feedback.

In order to assist the principals in using the system, all participants were given a PCN manual which we developed exclusively for the PCN system. In addition, hands-on training was provided at Far West Laboratory for all interested participants.

The PCN went on-line during the first week of April, 1985. Hours of operation were originally 24 hours a day, Monday through Friday. After seven weeks of operation, the PCN went on-line seven days a week in response to participant demand.

Although each PCN principal agreed to log onto the system at least once a week, the principals were free to do so as often as they wanted. Once logged on, the principals had the capability of reading the general, elementary ed, and secondary ed boards; posting bulletins for all participants to read; and corresponding with individual principals using the electronic mail system.

A daily off-line period (downtime) of one hour was scheduled between 10 a.m. and 11 a.m. West Coast time for system maintenance. During this hour, the system operators answered all inquiries and correspondence from the prin-

cipals; monitored each of the boards for new activity; verified new users and assigned them the appropriate security level; initiated conversations with new users via the electronic mail system; and printed out all newly posted bulletins and new user statistics for data collection purposes. This hour was also periodically used to back up the system and to enter new data such as PCN news updates, bulletins on the general board, and information pertaining to the particular topics being considered on the elementary and secondary ed boards.

Data Collection

In order to document the use of the PCN as an information exchange system, information was collected before, during, and after the online period. Before the system went online, PCN users submitted survey information on their computer experience and demographics on their school and district populations. During the operation of the PCN, information was collected on general system usage and on the content and type of communication among principals. This information included printouts of the date, time, and length of each principal's session; copies of all bulletins posted; copies of mail from and to sysops; and, occasionally, samples of mail between users. After the PCN went offline, another survey was taken to determine the principals' reactions to the system and how valuable it had been in encouraging information exchange among them.

Results

In analyzing our data from the initial survey, the printouts on system usage, and the final survey of PCN use, we focused on three interrelated issues: 1) the characteristics of the PCN principals, 2) the use of the PCN by the principals, and 3) users' perceptions of the system. Each of these issues is discussed below.

Participants. The 38 principals who were selected to participate in the PCN project represented schools, both public and private, from a variety of levels, settings, and states. (See Table 1.) The majority of principals worked in elementary schools, and their student populations could be characterized as predominantly middle and upper-class (families averaged 39% professional and 23% semi-professional). Twenty of the principals' schools were located in California; the remaining 18 were located in twelve other states across the nation, ranging from Alaska to Texas, Colorado to New Jersey.

The PCN participants tended to be experienced as principals but new to their particular school assignments. The 22 participants who returned the final survey had been principals for an average of 7.5 years, with 65% of them having under 10 years of experience. Eighty percent had been principals in their current assignments for three years or less, averaging 2.5 years. This led us to believe that principals who were new to their schools were particularly eager to exchange ideas with other principals.

The principals' computer experience ranged from almost none at all to one principal who had developed his own bulletin board system. Approximately half of the final survey respondents indicated that they had had only limited experience with computers before joining the PCN. Fully two-thirds said that they had had no experience with computer bulletin boards.

Not surprisingly, several principals explicitly stated that they joined the PCN in order to learn more about computers. The most often cited reason for joining the PCN, however, was the opportunity to learn new ideas about education. Other frequently cited reasons for joining the PCN were an interest in interacting with other professionals and in sharing information with principals.

Use of the System. The use of the PCN system was documented through two sources: the printouts on system usage and the final survey completed by the PCN principals. Based on this data, we were able to determine how often principals used the system, the length of time they logged on each session, and the times of day they usually called. We were also able to document how the principals used the PCN's major components: the general bulletin board, the elementary ed and secondary ed boards, and the electronic mail system.

System documentation revealed that the rate of weekly PCN usage varied greatly. Although all 38 principals had agreed to use the system at least once a week, the data showed that they did not do so. Over the 11-week on-line period, there was a weekly average of 17 calls from 13 users. There was only one call during the first week of operation; usage thereafter increased to a peak of 36 calls from 25 users during the fourth week (April 29 to May 3). Overall, PCN usage was greatest from mid-April to late May, although there was some minor fluctuation. After this period, system usage decreased dramatically, perhaps because, as principals pointed out, June is one of the busiest times of the school year.

The length of time the principals were on-line also varied considerably. We suggested a time limit of 30 minutes per session to allow as many principals as possible access to the board. The calls, however, ranged in length from one minute to 56 minutes, with an average of 14 minutes. Occasionally,

principals made extremely short calls followed by longer ones later in the day or week. This was usually due to the fact that principals were interrupted during a session and they had to call again to complete the business they had started. One principal explained on the final survey, "On several occasions, I signed on only to be called away to a crisis." Most principals noted that time was a constraint regarding frequency and duration of their PCN calls.

To help accomodate principals, the PCN was on-line 24 hours day. In the initial survey, principals had indicated that they would probably call early in the morning or after school. In concurrence, the data shows that most calls were clustered before 9:00 a.m. and between 4:00 p.m. and 8:00 p.m. Calls were also made, however, as early as 5:40 a.m. (their time), during and after lunch hours, and as late as 1:00 a.m. Principals who had computers at home usually made their calls in the evening. A few principals commented that our maintenance time (10:00 a.m. to 11:00 a.m.) was inconvenient for them. The data showed, however, that there were very few calls in the hour before or after the maintenance period.

Of the PCN's major components (the three bulletin boards and the electronic mail system), the three bulletin boards received the most usage. This usage primarily consisted of participants reading bulletins rather than posting them. In fact, over 50% of the principals did not post any bulletins on any of the three boards. Of those that did post bulletins, the majority were experienced with computers and bulletin board systems. The data showed that 91% of the bulletins were written by principals who considered themselves to be experienced computer users; 65% of the bulletins were posted by users with previous bulletin board experience. In all, 23 bulletins were contributed by 12 principals on the three boards.

The bulletins which were posted by principals fell into two categories: 1) requests for information, and 2) information sharing. In eight of the bulletins, for example, principals requested information on various issues pertaining to their roles as instructional leaders. These issues included running an all-day kindergarten, structuring a six-period teaching day, selecting language software, setting up a student peer counseling program, and implementing a school improvement project. Two examples of requests for information follow:

> We are interested in implementing a peer counseling program aimed at increasing the motivation of incoming 9th grade students who have been identified by their intermediate school as possible non-achievers or having high potential of being a drop out. If you have or know of a successful program, please leave me a message.

> I have been asked by my district to see how many high schools have teachers teaching a 6 period day. The students would be there 7 periods a day. Our district is currently teaching only 5 periods and have 2 prep periods a day. Is this the norm or not?
> Any help you can give would be helpful. Thanks.

In thirteen other bulletins, principals shared information on particular management practices that they found useful. These practices included a "point system" for students, incentives for classroom computer use, four stages for implementing a computer program, providing computer instruction for teachers, and setting graduation requirements. One principal shared information about the incentives he uses to motivate students and staff:

> In the area of student incentives, nothing beats person contact with the parents. I have called students' parents who are on the honor roll and then followed up with written notes. The computer stores the basic format of the letter on page two and all I have to do is bring the appropriate paragraphs to page one and print the letter. The time required is minimal and the rewards are fantastic.
>
> For staff incentive this year, I had business cards printed for all of the teachers to use. This was a first for the staff and they have found many uses for the cards.

The remaining two bulletins posted by principals were requests for information concerning the operation of the bulletin board. These bulletins were posted early (during the fourth week) in the board's online period.

The electronic mail system, the other major PCN component, was used much less frequently than the three bulletin boards. In order to encourage the use of electronic mail, we sent messages to participants the first time they logged on the PCN; these messages frequently included a question to prompt an electronic mail response to the sysop. Despite our efforts, however, over 50% of the survey respondents said they never used the system.

At the beginning of the PCN's on-line period, the electronic mail system was primarily used by principals wishing to communicate with the sysops about technical issues such as how the PCN system was configured, whether bulletin entries had to be written in "all caps," and when additional PCN training sessions would be held. After becoming comfortable with the system, however, principals began to use electronic mail to discuss topics of interest with each other. Participants both initiated communication about their own instructional management concerns and responded to a variety of the special topics presented in bulletins. Because participants were automatically given the option to send electronic mail after they read a bulletin on any of the three boards, some principals frequently offered comments and information about their personal practices.

Principals' Perceptions of the System. The survey distributed to all principals at the end of the on-line period asked participants to consider what problems they experienced using the system, how useful they found the sysops and manual, how useful they found the major PCN components, what they liked and disliked about the system, and whether they would consider joining the PCN again. The results are presented below.

The majority of the respondents stated they had no problems in using the system. Twenty-five percent of the respondents remarked that they did not feel they used the system effectively because of their own time constraints; another twenty-five percent cited mechanical and phone transmission problems. Most of the problems cited, which included continuing hardware problems and "garbage on the screen," we could attribute to faulty phone line connections and/or computer configuration problems with the users' systems, as well as to the fact that a high percentage of our principals had little experience using computers. Only one principal complained of not being able to access the PCN because the phone line was busy.

The majority of respondents also stated that they found both the sysops and the manual to be helpful. Participants appreciated the sysops' prompt responses to their questions. Novice users especially liked the on-line sysop assistance that was occasionally provided when users had problems. The manual was cited by many respondents as being easy to read, simple to use, concise, and well-documented with detailed examples. The manual was cited by other respondents, however, as needing an index, more clarity, more detail on command usage, and, conversely, less detail to make it easier to read. In addition, one principal suggested that a summary page of commands be included so that users could keep this one-page guide next to their computers for easy access.

The general bulletin board was found to be useful by approximately 70% of the respondents. One principal commented, "A great idea!" He further added, "Many [bulletins] were a source of discussion at our administrative staff meetings." As indicated in the section above, over 50% of the respondents read bulletins but did not post any. One principal wrote, "I did not

use the [bulletin board] except to read, but I did gain some new ideas." This principal went on to explain, "Perhaps if I had not been so new to the idea of the bulletin board system or participated longer I might have gotten brave enough to post." This comment substantiates the data which showed that the majority of principals who posted bulletins were experienced computer users.

The elementary ed and secondary ed boards, which contained information from the Principals' Yellow Pages, were rated as useful by 95% of the respondents who used these boards. Principals remarked that these boards contained "good, up-to-date" information that they could use in their schools. One principal stated:

> I liked the different topics and issues that were presented. They caused me to think about solutions and sometimes I wrote down the ideas to use in my own situation. It was stimulating.

Another principal commented:

> [I] took several items...related to positive reinforcement. I'll be sharing the ideas with my Student Recognition Committee this fall.

Some principals shared the information with other administrators inside their district. A principal from a small district in the Sierra Nevada wrote:

> [The information] is current and in our remote area, not available to us. It is also stimulating and sparked some pretty good conversations when I shared it with the other principals.

The complaints about the boards were few: one principal stated that although the boards were useful, most of the information on them was too general; another principal commented that large amounts of information (such as found on the feature boards) should be available for reading off-line.

Of the respondents who used the electronic mail system, 95% rated the system as being useful. One principal's comment about the system read:

> Outstanding! A great way to establish direct communication with other principals. Items initially brought up as bulletins could be discussed in detail--Also, a positive way to renew acquaintances and friendships.

Another principal wrote that the system was "very good" because it enabled him to get "personal feedback for specific concerns." Of the principals who did not use the system, some commented that it "has great potential" or that its "potential is great communication." One non-user, however, commented:

> I was going to use this feature but the person that I wished to send mail to had not logged on to the system. I think that if I had not known this person prior to participating in PCN....that I probably would not have used the Mail feature. I would have responded to someone's bulletin first.

Apparently, for some principals, the electronic mail system is not the first choice as a way to communicate with strangers.

When asked what they specifically liked or disliked about participating in the PCN, the majority of respondents had postive comments about their experience. Over a third of the respondents mentioned that they liked getting new information. Approximately a quarter of the respondents stated that they liked exchanging ideas with other principals. One principal appreciated the opportunity to "offer immediate or nearly immediate responses to concerns." This principal also enjoyed "the interactive experience with sysops [which] helped stimulate ideas and challenged me to justify my position." Another principal simply stated, "I'm very pleased with my first experience with a computer bulletin board system."

The respondents' complaints about the PCN tended to focus on equipment problems. One principal, for example, didn't like the "frustration [she] had in using the equipment and in many instances not having it work." Other

complaints tended to focus on system availability, such as disliking that the system was on-line at one of the principals' busiest times of year.

Finally, all but one of the respondents said that they would join the PCN again. As one principal explained, "The two month try-out allowed for only a peek at possibilities of a yearlong hook-up." Other principals said that they would join again because of the benefits they received from talking with other principals. Overall, the respondents agreed with the principal who stated succinctly: "Do it again! Do it again!"

Discussion

Based on our results, we believe that an electronic network system can be a useful and productive way to stimulate information exchange among principals. Participants in our electronic network, the Principals' Computer Network (PCN), were able to share their own successful strategies and programs with other school administrators, request suggestions from their peers on specific problems they encounter, and access fresh ideas or solutions to common problems they experience.

At the same time, however, our pilot efforts helped us to identify some possible pitfalls in operating such a network and to suggest ways to minimize these potential drawbacks. Timing, for example, seems to be of great importance. Because of the time of year the PCN went online, many of the participants were unable to take full advantage of the system's offerings. Late spring, or the end of the school year, is definitely a busy time for principals. Many of our participants indicated that late summer or some time in the fall would have been a better time for them to learn how to access the system and then use it productively.

Another timing consideration is the length of time it took principals to learn how to use the PCN. Although all of our participants were eager to network with other principals through the electronic medium, very few had any experience at all with electronic network systems. In fact, most of our principals had only limited experience with computers. The participants who received our hands-on training (offered at FWL) quickly learned how to use the system, but these trained participants were few in number. Most principals had to rely on themselves, the PCN manual, and, occasionally, experienced computer staff in their schools. Unfortunately, many of the principals seemed to only glance at the manual, and therefore spent more time than necessary learning the ins and outs of the system. Because one can not force a participant to read a manual or seek the help of an experienced computer person, it is necessary to give principals ample time to familiarize themselves (and to experiment) with the system. As one PCN principal, very experienced with computers, remarked early in the PCN's operations,

> I can tell that most users are still at the dial and look stage...It is so hard to get people to become active... They are so afraid of telcom systems.

While none of our participants actually stated that they were "afraid" of the PCN, one principal did state that he did not feel "brave enough to post" bulletins. Most principals did not use the the PCN features that required more active use. For example, the majority of principals read bulletins rather than posted them. Moreover, the principals who did post bulletins tended to be experienced with computers and bulletin board systems. Similarly, the majority of principals did not use the electronic mail feature, even though they were urged by the system operators to do so. Hesitation to use the electronic mail feature may have resulted from a reluctance to communicate privately with strangers rather than from any

discomfort with computers. However, we believe that, generally, principals did not post bulletins or mail because they did not feel very comfortable doing so. Ideally, principals (or other educators) with little computer experience should be given plenty of time to experiment with a network system before being expected to actively network with other participants.

To help further ensure networking success, we suggest that principals be given access to computers at night and on the weekends. These are the times that our most experienced computer users often used the PCN. This would require principals to have a home computer, or that principals be given a computer to use at home for a time period long enough to at least ensure familiarity with the system.

In spite of the above problems, the PCN was still able to provide principals with an opportunity to interact with colleagues in a way that was beneficial to them in their roles as school leaders. In fact, in light of the drawbacks mentioned above, perhaps the biggest shortcoming of the PCN was its limited (eleven weeks) period of operation. As one PCN participant stated when asked if he'd join the PCN again, "Absolutely--great idea. The two month try-out allowed for only a peek at possibilities of a year-long hook-up." No doubt if the PCN had operated for a year, more interaction would have taken place on all levels. Indeed, judging by the response we have had from principals still interested in joining the PCN (even though it is no longer in operation), a year-long effort would have generated more interest, more interaction, and more involvement from principals across the nation.

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